

WHAT IS CLAIMED IS:

1. A device for pressing together a first roll and a second roll in a coating unit for a two-dimensional application of a liquid to pasty application medium to a moving fiber material web, the first roll having a first roll body, the second roll having a second roll body, the first roll being arranged axially parallel to the second roll, at least one of the first roll and the second roll being movable relative an other of the first roll and the second roll, comprising:
 - a force device arrangement for providing a force being transmitted at least partly in a force transmission path running from said force device arrangement to at least one of the first roll and the second roll, said force device arrangement producing a pressing force between the first roll and the second roll, and
- 10 at least one sensor registering said pressing force between the first roll and the second roll, said at least one sensor being arranged in said force transmission path, said at least one sensor being arranged outside the first roll body and the second roll body.
2. The device of claim 1, wherein said fiber material web is one of a paper web and a board web.
3. The device of claim 1, further including at least one second force transmission path, said force being transmitted at least partly in said force transmission path being branched to said force transmission path and said at least one second force transmission path, said at least one sensor being arranged in said force transmission path after said force transmission path branches 5 away from said at least one second force transmission path.

4. The device of claim 3, wherein said force being transmitted at least partly in said force transmission path includes a first force associated with said force transmission path and a second force associated with said at least one second force transmission path, a ratio of said first force to said second force can be varied.

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5. The device of claim 4, further including at least one stop element arranged in said at least one second force transmission path, said at least one stop element being adjusted to change said ratio of said first force to said second force.

6. The device of claim 1, further including a force transmission direction associated with said force transmission path, at least one said sensor being arranged upstream of the first roll body relative to said force transmission direction.

7. The device of claim 1, further including a force transmission direction associated with said force transmission path, at least one said sensor being arranged downstream of the second roll body relative to said force transmission direction.

8. The device of claim 1, further including a force transmission direction associated with said force transmission path, at least one said sensor being arranged upstream of the first roll body relative to said force transmission direction, at least one said sensor being arranged downstream of the second roll body relative to said force transmission direction.

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9. The device of claim 1, further including a stand connected to the second roll and a bearing lever connected to the first roll, a position of the second roll being fixed relative said stand, the second roll being rotatable, the first roll being rotatable, said bearing lever connected to said stand, said bearing lever being pivotable relative said stand to bring the first roll and the
5 second roll together, said force device arrangement acting on said bearing lever.

10. The device of claim 9, wherein at least one said sensor is fitted to one of said bearing lever and said stand.

11. The device of claim 9, further including a bearing region associated with one of the first roll and the second roll, at least one said sensor being arranged in said bearing region.

12. The device of claim 11, further including a bearing journal associated with said bearing region, said at least one said sensor being arranged in said bearing region being fitted to said bearing journal.

13. The device of claim 11, further including an antifriction bearing enclosing a bearing journal associated with said bearing region, said antifriction bearing being provided with said at least one said sensor being arranged in said bearing region.

14. The device of claim 13, wherein said at least one said sensor being arranged in said bearing region is integrated into said antifriction bearing.

15. The device of claim 13, wherein said antifriction bearing includes an outer ring, said at least one said sensor being arranged in said bearing region is fitted onto said outer ring.

16. The device of claim 11, wherein said bearing region includes a bearing housing with an antifriction bearing surrounding a bearing journal, said at least one said sensor being arranged in said bearing region is fitted to said bearing housing.

17. The device of claim 9, further including a bearing kit for a bearing journal of one of the first roll and the second roll, a sensor module being built between said bearing kit and one of said stand and said bearing lever, at least one said sensor is accommodated in said sensor module.

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18. The device of claim 1, wherein said at least one sensor includes at least one of a tension sensitive element and a pressure sensitive element.

19. The device of claim 1, wherein said at least one of a tension sensitive element and a pressure sensitive element includes a strain gage.

20. The device of claim 1, further including an electronic control unit responding to said at least one sensor, said electronic control unit controlling said force device arrangement, said electronic control unit being set up for a regulated maintenance of a predefined desired value of said pressing force.

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21. The device of claim 20, wherein said both the first roll and the second roll include a first axial end and a second axial end, said force device arrangement operational in both a region of said first axial end and a region of said second axial end, said force device arrangement operational in said region of said first axial end includes a first independently controllable force device, said force device arrangement operational in said region of said second axial end includes a second independently controllable force device, said at least one sensor designed for a mutually independent registration of said pressing force in both said region of said first axial end and said region of said second axial end.

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22. The device of claim 21, wherein at least one of said first independently controllable force device and said second independently controllable force device is a hydraulic device.

23. The device of claim 21, wherein said electronic control unit controls said first independently controllable force device and said second independently controllable force device such that a substantially constant line pressure results between the first roll and the second roll over an axial extent of the first roll and the second roll.

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24. The device of claim 1, wherein the moving material web is led between the first roll and the second roll, at least one of the first roll and the second roll is used to transfer the liquid to pasty application medium to the moving material web.

25. A method of setting a pressure between a first roll and a second roll in a device for at least one of producing and treating a moving fiber material web, at least one of the first roll and the second roll being movable toward an other of the first roll and the second roll, at least one of

the first roll and the second roll having a radially resilient roll cover, said method comprising the
5 steps of:

determining a distance-force characteristic for the first roll and the second roll, said distance-force characteristic representing a relationship between a mutual axial spacing of the first roll and the second roll and a pressing force transmitted between the first roll and the second roll;

10 setting an associated desired value of said mutual axial spacing from said distance-force characteristic; and

achieving a desired said pressing force in a working operation of the device.

26. The method of claim 25, wherein the device includes:

a force device arrangement for providing a force being transmitted at least partly in a force transmission path running from said force device arrangement to at least one of the first roll and the second roll, said force device arrangement producing said pressing force between the
5 first roll and the second roll, and

at least one sensor registering said pressing force between the first roll and the second roll, said at least one sensor being arranged in said force transmission path, said at least one sensor being arranged outside the first roll body and the second roll body.

27. The method of claim 25, wherein said determining step includes measurements carried out in a calibration phase of the device to determine said distance-force characteristic.

28. The method of claim 25, wherein said determining step includes ascertaining a plurality of value pairs of said mutual axial spacing and said pressing force to determine said

distance-force characteristic, said plurality of value pairs are determined for different values of said pressing force.

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29. The method of claim 28, wherein one of said plurality of value pairs is determined for a close position of the first roll and the second roll, said close position includes a mutual contact of the first roll and the second roll, said close position includes a substantial absence of said pressing force transmitted between the first roll and the second roll.

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30. The method of claim 28, wherein one of said plurality of value pairs is determined for an approximate maximum said pressing force for which the device is designed.

31. The method of claim 28, wherein said determining step includes an interpolation between said plurality of value pairs to determine said distance-force characteristic.

32. The method of claim 31, wherein said interpolation is a linear interpolation.

33. The method of claim 25, further including a step of grinding said radially resilient roll cover and a step of repeating said determining step after said grinding step.

34. The method of claim 25, further including the step of determining said mutual axial spacing of the first roll and the second roll by a plurality of sensors during a working operation of the device and adjusting said mutual axial spacing to a desired value of said mutual axial spacing during said working operation of the device.

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35. The method of claim 25, wherein said both the first roll and the second roll include a first axial end and a second axial end, a region of said first axial end includes a first axial spacing, a region of said second axial end includes a second axial spacing, said first axial spacing is set independently of said second axial spacing, said second axial spacing is set independently of said first axial spacing, both said first axial spacing and said second axial spacing are set such that a substantially constant line pressure between the first roll and the second roll exists over an axial extent of the first roll and the second roll.

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36. The method of claim 25, wherein said device is a machine for coating one of a paper web and a board web.

37. The method of claim 36, wherein one of said paper web and said board web is led between the first roll and the second roll, at least one of the first roll and the second roll is used to transfer a liquid to pasty application medium to one of said paper web and said board web.

38. An arrangement for pressing together a first roll and a second roll in a device for at least one of producing and treating a moving fiber material web, the first roll having a first roll body, the second roll having a second roll body, the first roll being arranged axially parallel to the second roll, at least one of the first roll and the second roll having a radially resilient roll cover, comprising:

a plurality of actuating elements for moving at least one of the first roll and the second roll along an approach path, the first roll and the second roll being movable into a close state along said approach path, a pressing force is transmitted between the first roll and the second roll in said close state;

10 a control unit controlling said plurality of actuating elements, said control unit
determining a distance-force characteristic for the first roll and the second roll, said distance-
force characteristic representing a relationship between a mutual axial spacing of the first roll
and the second roll along said approach path and said pressing force transmitted between the first
roll and the second roll, said control unit determining from said distance-force characteristic a
15 desired value of said mutual axial spacing, said control unit effecting said desired value of said
mutual axial spacing on the first roll and the second roll thereby achieving a desired said pressing
force; and

 a storage unit connected to said control unit, said storage unit for storing said distance-
force characteristic.

39. The arrangement of claim 38, further including at least one sensor for registering said
mutual axial spacing of the first roll and the second roll, said control unit responding to said at
least one sensor, said control unit being designed for a regulated maintenance of said desired
value of said mutual axial spacing.

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40. The arrangement of claim 38, wherein both the first roll and the second roll include a
first axial end and a second axial end, a region of said first axial end includes a first axial
spacing, a region of said second axial end includes a second axial spacing, said control unit sets
said first axial spacing independently of said second axial spacing, said control unit sets said
5 second axial spacing independently of said first axial spacing, both said first axial spacing and
said second axial spacing are set such that a substantially constant line pressure between the first
roll and the second roll exists over an axial extent of the first roll and the second roll.

41. The arrangement of claim 38, further including a roll carrier holding the first roll, the first roll being displaceable with respect to the second roll along said approach path, said plurality of actuating elements including a force device arrangement acting on said roll carrier to introduce into said roll carrier a force producing said pressing force.

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42. The arrangement of claim 41, wherein said force introduced by said force device arrangement is used substantially completely for producing said pressing force.

43. The arrangement of claim 41, wherein said force introduced by said force device arrangement is branched to a first force transmission path transmitting said pressing force between the first roll and the second roll, said force introduced by said force device arrangement is also branched to at least one second force transmission path.

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44. The arrangement of claim 43, wherein said force introduced by said force device arrangement includes a first force associated with said first force transmission path and a second force associated with said at least one second force transmission path, a ratio of said first force to said second force can be varied.

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45. The arrangement of claim 44, further including at least one stop element arranged in said at least one second force transmission path, said at least one stop element being adjusted to vary said ratio of said first force to said second force.

46. The arrangement of claim 45, wherein said at least one stop includes both at least one first stop arranged for a common movement with the first roll along said approach path to the

second roll and at least one opposed stop fixed with respect to an axis of the second roll, at least one of said first stop and said opposed stop can be adjusted.

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47. The arrangement of claim 38, wherein said device is a machine for coating one of a paper web and a board web.

48. The arrangement of claim 47, wherein one of said paper web and said board web is led between the first roll and the second roll, at least one of the first roll and the second roll is used to transfer a liquid to pasty application medium to one of said paper web and said board web.

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